

# Lec 8: structuring system logic Requirements

## \* Logic model

→ DFDs don't show logic inside Processes.

Logic model: represent internal structure and functionality of Processes described on DFD occur.

## ① Modeling logic with structured English:-

→ modified from English to specify logic of information Processes.

→ It uses subset of English

(Action verbs, Noun Phrases, No adjectives or adverbs)

→ No specific standards

→ similar to programming language.

(if conditions - case statements)

## ⑤ Modeling logic with decision tables :-

→ used when Process Contains several different Conditions.

→ better than structured english when the Process is complicated containing several nested statements.

decision table : is a matrix representation of the logic of decision

↳ It specifies the Possible Conditions and the resulting actions.

→ Best used for complicated decision logic.

### \* Standard Procedure for creating decision tables :-

1) Name the Conditions and values each Condition can assume.

2) Name all possible actions that can occur.

3) List all rules

4) Define the action for each rule.

5) Simplify the table.



### c) Modeling logic with decision trees:-

- Graphical representation of a decision situations.
- Both decision trees & tables are used for communication with users.
- Decision situation points are connected together by arcs and terminate in ovals.
- ⇒ two main components:-
  - 1) decision points represented by nodes.
  - 2) Action represents by ovals.

### Decision Among English, decision table, trees:-

Criteria	structured English	Decision table	Decision trees.
Determine Conditions and actions	2nd Best	3rd Best	Best
Transform Conditions and actions into sequence	Best	3rd Best	Best
check consistency and completeness	Third Best	Best	Best

## \* Complete decision table for Payroll system Example

	Conditions/ Courses of actions	Rules					
		1	2	3	4	5	6
Condition stubs	Employee type	S	H	S	H	S	H
	Hours worked	<40	<40	40	40	>40	>40
Action stubs	Pay <del>base</del> salary	X		X		X	
	Calculate hourly wage		X		X		X
	Calculate overtime						X
	Produce Absence report		X				

Notes



### Condition stubs

↳ Lists condition relevant to decision.

### Action stubs

↳ Actions that result from a given set of conditions.

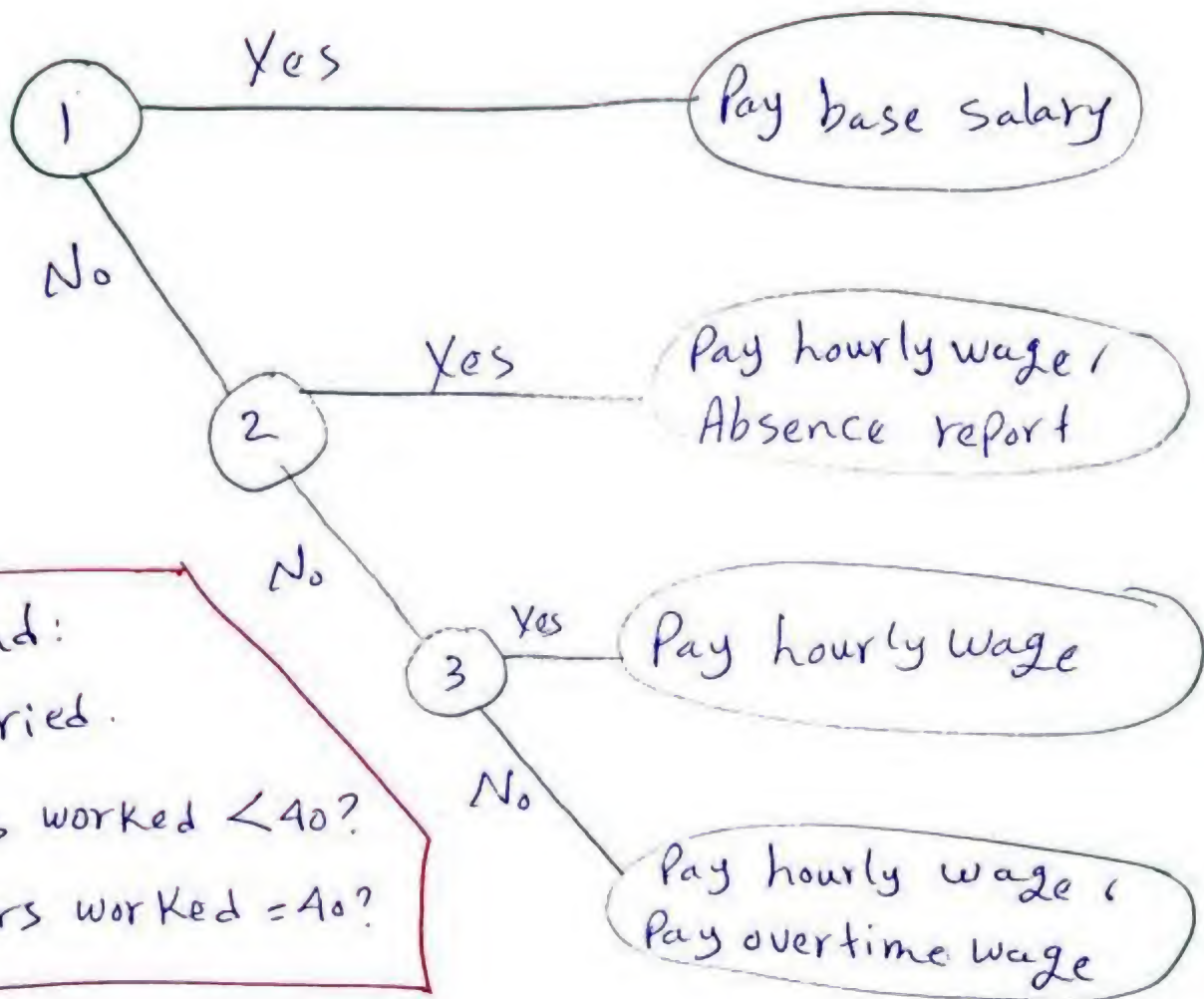
H → Hourly Paid	Employee type
S → Salaried	

### Rules

↳ For a given set of condition, Rules specify which actions are to be followed.



## Decision tree of Payroll system Example



→ tree is read from left to right.

→ First node on left called root node.

→ ~~the~~ description of choice show on legend.

→ possible actions are listed on the right.